APPENDIX C

Affidavit of Philip C Malte Under Rule 132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	GARDNER, Conrad O.	Group Art Unit:	3611
Application No.:	08/896,514	Examiner:	Michael Mar
Filing Date:	June 23, 1997	Docket No.:	95-004M
		Date:	December 9, 1999

For: EXTENDED RANGE MOTOR VEHICLE HAVING AMBIENT POLLUTANT PROCESSING

AFFIDAVIT OF PHILIP C. MALTE UNDER RULE 132

Philip C. Malte, being duly sworn, deposes and states:

1. Philip C. Malte is Professor of Mechanical Engineering at the University of Washington, Seattle, Washington. This position has been held since 1983. In the 10 -year period prior to 1983, Philip C. Malte was Assistant Professor of Mechanical Engineering at Washington State University, Pullman, Washington, Associate Professor of Mechanical Engineering at Washington State University, and Associate Professor of Mechanical Engineering at the University of Washington. Additional positions held include Engineer (Martin Marietta Corporation), Senior Engineer (Rohr Industries), Senior Engineer and Chief Consulting Engineer (Energy International, Inc), and US Department of Energy (Faculty Rotator).

2. Philip C. Malte studied engineering at The University of Michigan, Ann Arbor, Michigan. The degrees received include PhD in 1971, Masters of Science in 1966, and Bachelor of Science in 1964.

3. Philip C. Malte has performed research and published in the field of Combustion since 1970. Focus of the research has been on the generation and control of pollutants in combustion systems, especially in gas turbine engines and piston engines.

4. Philip C. Malte has taught university courses on combustion engines and on combustion science and technology for approximately 25 years. The University of Washington course numbers are ME481 and ME424. Other courses taught deal with energy conversion.

5. Philip C. Malte has developed and maintained laboratories that support research and teaching on combustion and combustion engines. The Internal Combustion Engines Laboratory at the University of Washington includes dynamometer test stands with engines, including a multi-cylinder gasoline engine, a single-cylinder spark ignition engine, and two single-cylinder diesel engines.

6. Teaching on engines by Philip C. Malte has included traditional spark ignition and diesel engines, improvements in combustion for these engines, and alternatives to these engines. The latter topic includes hybrid-electric engines. Research on engines has dealt with combustion for land-based gas turbine engines and large-bore spark ignition engines, and alternative fuels for these engines.

7. Philip C. Malte is a Member of the American Society of Mechanical Engineers (ASME), The Combustion Institute (CI), and the Society of Automotive Engineering (SAE).

8. Publication by Philip C. Malte has occurred in the journals and proceedings of the ASME and the CI. Additionally, SAE papers have been written.

9. Familiarity with hybrid-electric propulsion for automobiles has been gained by Philip C. Malte through teaching and study of the subject.

10. Philip C. Malte keeps abreast of the state of the art in combustion engines and related fields.

11. The Examiner has stated that:

The definitions of the systems in claims 34, 35, 37, 40 & 50-54 are unpatentable over Ellers.

Ellers discloses a pre-programmed control 25 which activates the internal combustion engine 21 and the electric torque converter 35 for coupling the engine to the second pair of wheels 15 and 17 when the vehicle approaches a pre-selected desirable speed of 55 mph. Since Ellers describes the pre-selected desirable speed at which the engine is activated as a cruising speed (col. 1, lines 55-58), after this speed has been reached, the vehicle is in a condition which constitutes a "cruise mode on condition". When the speed drops below 55 mph, the control decouples the engine from the second pair of wheels. This condition constitutes a "cruise mode off condition". The control could also activate a second coupling 65 for connecting the engine to an electric generator 63 for charging a battery 5 during the "cruise mode off condition". The internal combustion engine 21, being a small engine with no throttle control, would operate at a constant speed for maximum efficiency and minimum pollution. With respect to claims 42-44, note the control system for using only the electric motor at speeds below the pre-selected desirable speed of 55 mph. As the vehicle approaches the pre-selected desirable speed, the control system activates the internal combustion engine and disconnects electric power to the electric motor. Since the electric motor is always operating below the pre-selected desirable speed, the speedometer 67 would function as a display device for indicating when the electric motor is powering the hybrid vehicle at the lower speeds. With respect to claims 37 and 40, the engine drives the wheels when the vehicle is above the pre-selected desirable speed. When the battery charge is